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Food and Agriculture Organization of the United Nations, Washington, U.S.A.

METRIC SYSTEM

This Fisheries Bulletin, an FAO publication, uses the metric system of units to measure quantities in terms of weight, volume, capacity, length, and area. "Tons" and "quintals", when not specified by a descriptive adjective, therefore mean "metric tons" (1,000 kilograms) and "metric quintals" (100 kilograms), respectively.

In the case of monetary values, the currency units are defined by the adjective but unless otherwise specified the term "dollars" refers to U.S.A. dollars.

CONVERSION FACTORS

(a) General: Non-metric units to metric units:

Converted from	To:	Multiplier
Pounds	Metric tons	0.0004536
Hundredweight (112 pounds)	" "	0.0508
Hundredweight (100 pounds)	" "	0.04536
Quintal (112 pounds)	" "	0.0508
Short ton (2,000 pounds)	" "	0.9072
Long ton (2,240 pounds)	" "	1.0161
U.S.gallons	Liters	3.7853
Imperial gallons	"	4.546

(b) Fisheries Products: Capacity and numbers to metric weight units:

Converted from:	To:	Multiplier
Hectoliter (herring)	Metric tons	0.093

(c) Fisheries Products: "Yield" factors:

Converted from:	To:	Multiplier
Wet-salted cod and allied species	Dried basis	0.66

SYMBOLS USED IN TABLES

... Not available ø Negligible - Nil

Fisheries Bulletin

Volume I, Number 2 September 1948

PREFACE

Volume I of the Bulletin covers the five issues ending with the December 1948 issue. All subsequent volumes will cover one calendar year.

Pages of all issues of the same volume will be numbered consecutively; the same principle is adopted in respect to the numbering of tables. This consecutive numbering of tables and pages will facilitate reference to the text and tables of the Bulletins for those who prefer to have them bound in volumes.

The section "Surveys of World Fisheries" covers articles and notes on fisheries in various parts of the world and will refer not only to development and conditions in 1947 and the current year but also to conditions in previous years. Attention is being given to areas about which little information is available as to conditions in the fisheries industries; some of these countries might be of little significance when compared with the great producing countries, but it is necessary to fill in the many gaps at present existing in the world picture.

The section "Annual Review of Fisheries" will consist of reviews of conditions in the fisheries of various countries during the previous calendar year.

The section "Comments on Current Fisheries" covers topics pertaining to the current year.

The FAO Yearbook of Fisheries Statistics - 1947 has now been published. Supplements to the Yearbook will be published in this Bulletin from time to time to revise and bring up-to-date the tables already published and to add tables for countries or topics not dealt with in this Yearbook.

Errata: Fisheries Bulletin, Vol. 1, No. 1 (August, 1948) page 19, Table 7. - PORTUGAL: Imports of Principal Fisheries Products: Fish, dried, salted or smoked, Total (1938) should read 38,083 metric tons and Cod (1938) should read 37,789 metric tons.
FAO Yearbook of Fisheries Statistics 1947, page 124, Table 103. - PORTUGAL: Imports 1930-1945, item 5, Cod (1938) should read 377,894 metric quintals, not 37,789. Consequently Table 142, page 176, Summary of Imports and Exports, Portugal 1938, Fish dried, salted, smoked, Imports should read 38,083 and the total should read 633,200 metric tons.

Fisheries Bulletin, Vol. 1, No. 1 (August, 1948) page 4, paragraph 4, line 4, "increases of 815 percent" should read "increases of 8.5 percent."

Table 18. - Production of Whale Oil a/ in Certain Countries, 1929/30 - 1946/47
Quantities in Metric Tons

Year	Total	Argentina	British Empire	Chile	Denmark	Germany	Iceland	Japan	Mexico	Netherlands	Norway	Panama	Portugal	U.S.A.	U.S.S.R.
1929/30 and summer 1930	473,971	16,163	145,084	2,094	b/1,485	-	-	c/	-	-	304,160	-	-	4,985	-
1930/31 and summer 1931	624,328	14,927	191,555	-	14,392	-	-	2,756	-	-	392,340	-	-	8,358	-
1931/32 and summer 1932	155,083	8,249	136,137	-	-	-	-	3,426	-	-	4,841	-	-	2,430	-
1932/33 and summer 1933	439,721	9,243	199,902	-	549	-	-	3,674	-	-	223,088	-	-	2,130	1,135
1933/34 and summer 1934	435,719	11,140	201,663	-	510	-	-	3,855	-	-	212,292	-	-	4,199	2,060
1934/35 and summer 1935	455,724	8,992	218,194	2,817	507	-	117	7,135	647	-	209,859	-	-	4,171	3,285
1935/36 and summer 1936	486,176	12,733	209,751	d/1,488	503	-	578	12,580	-	-	196,891	34,849	-	13,715	3,088
1936/37 and summer 1937	543,674	8,023	217,755	1,003	13,101	10,497	485	32,006	-	-	201,807	30,733	-	25,473	e/2,791
1937/38 and summer 1938	615,528	8,766	221,086	1,402	551	62,607	833	71,465	-	-	197,962	19,922	1,233	28,160	1,541
1938/39 and summer 1939	489,006	11,316	152,016	982	880	63,356	637	f/81,869	-	-	g/144,588	11,659	1,172	17,338	3,193
1939/40 and summer 1940	449,801	6,677	157,130	-	-	-	-	100,499	-	-	154,058	19,135	1,701	10,601	-
1940/41 and summer 1941	211,764	7,535	43,875	-	-	-	-	114,184	-	-	41,432	-	1,534	116	3,088
1941/42 and summer 1942	30,478	10,297	6,885	-	-	-	-	-	-	-	10,922	-	2,213	161	-
1942/43 and summer 1943	29,121	8,629	5,821	-	-	-	-	-	-	-	12,192	-	2,350	129	-
1943/44 and summer 1944	33,131	8,467	6,700	2,347	-	-	-	-	-	-	13,886	-	1,706	25	-
1944/45 and summer 1945	47,697	12,791	4,275	3,519	-	-	-	-	-	-	25,298	-	1,814	-	-
1945/46 - Antarctic Season h/	139,003	7,625	43,187	-	-	-	-	-	-	-	88,191	-	-	-	-
1946/47 - Antarctic Season															
Total h/i/	337,345	8,099	131,868	-	-	-	-	j/12,111	-	13,108	165,932	-	-	-	j/5,927
Whale Oil	316,499	7,545	117,596	-	-	-	-	j/12,377	-	12,987	160,118	-	-	-	j/5,876
Sperm Oil	20,846	554	14,272	-	-	-	-	j/34	-	121	5,814	-	-	-	j/51
1947/48 - Antarctic Season															
Total h/	355,775	7,614	128,945	-	-	-	-	17,765	-	14,415	177,147	-	-	-	9,889
Whale Oil	332,807	7,163	117,581	-	-	-	-	17,755	-	13,208	167,649	-	-	-	9,451
Sperm Oil	22,968	451	11,364	-	-	-	-	10	-	1,207	9,498	-	-	-	k/438

Sources: FAO Yearbook of Fisheries Statistics, 1947, Washington; Norsk Hvalfangst - Tidende (The Norwegian Whaling Gazette) Nos. 9, September, 1947 and 7, July, 1943.

a/ Including sperm oil for the years 1929/30 - 1945/46.
b/ Including Faroe Islands.
c/ Small production of oil owing to extensive use of the whale for human food.
d/ The quantity of oil has been calculated as no information was available regarding oil equivalent for 88 sperm whales.
e/ The quantity of oil has been calculated as no information was available regarding oil production.
f/ Excluding whaling from the coast of Japan and Korea.
g/ Including the production of two Norwegian expeditions hired by Germany - 20,046 metric tons.
h/ Preliminary.
i/ The total oil production figures differ somewhat from data appearing in FAO Yearbook of Fisheries Statistics, 1947 because some errors were discovered in the original source.
j/ Approximate.
k/ Calculated.

LANDINGS & UTILIZATION OF HERRING & ALLIED SPECIES

In 1946 fishermen from 20 reporting countries (see Table 19) landed more than 3 million tons of herring and herring-like fish, which is more than 15 percent of the estimated total prewar world landings of all types of fish, herring included. About 1,100,000 tons of herring, wet basis edible weight, or approximately one-third of the quantity landed in 1946, were used for human consumption. About 1,100,000 tons round fresh weight were used for conversion into oil and meal, and possibly 100,000 tons for bait. The remaining quantity, about 700,000 tons, was "waste", which might include some small quantities used for fertilizer and for animal fodder other than meal.

The marketed weight in 1946 of the various herring products in 16 of the 20 countries was as follows:

Herring	Metric Tons
Fresh and frozen	297,000
Salted	382,000
Dried only 6/	123,000
Canned	195,000
Meal	217,000
Oil	104,000

Figures showing the quantity of raw material used for these products are not yet available.

For 14 countries it has been possible to make a retrospective survey of the herring landings. This is shown in Table 19, where statistics are given for the years 1935-1947. The 1946 landings of herring and herring-like fish were slightly below the immediate prewar level. Landings in the United States and Norway, which accounted for 43 percent of the 1946 total, were 21 percent and 16 percent respectively below average of the last five prewar years. United Kingdom and French landings show decreases as compared with prewar years, but in Belgium, Denmark, Netherlands, and, to a lesser extent, Iceland 7/, landings exceeded the prewar average. Export statistics for Newfoundland, which are here converted to round fresh weight, indicate a considerable increase in the quantity landed.

Only 12 of the countries which reported 1946 landings 8/ have so far reported figures for 1947. Their total landings of herring and herring-like fish in 1946 amounted to 2,071,215 tons. In 1947, 2,248,812 tons were landed in the same countries, that is, an increase of 9 percent over 1946 figures. If the herring landings of the countries which have not yet reported figures for 1947 are considered as equal to those of 1946, the total postwar landings in 1947 are almost on a level with those of 1938.

5/ Including herring, menhaden sardine, anchovy, pilchard, sprat (brisling), sild, and allied herring-like species (clupeidae).
6/ Japan only.
7/ Owing to increased catching and processing capacity, Iceland anticipates an increased catch.
8/ Belgium, Canada, Denmark, France, Iceland, Ireland, Japan, the Netherlands, Newfoundland, Norway, Sweden, and the United Kingdom.

Table 19. - Total Landings of Herring and Allied Species in Some Countries, 1935-1947

Country	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946 a/	1947 a/
	(Metric Tons, Round Fresh Weight)												
Total	...	4,369,595	3,730,773	3,568,607	...	3,389,713	...	2,955,731	2,959,134	2,912,702	...	3,006,117	...
Belgium	14,069	10,644	5,922	7,043	10,137	147	1,470	19,204	57,897	49,135	32,268	37,947	33,042
Canada	154,447	194,500	198,400	181,459	190,947	263,915	228,521	258,388	266,608	240,681	...	223,391	218,394
Denmark	15,964	16,144	14,915	14,526	18,797	32,362	32,431	23,007	26,577	29,378	...	27,500	32,000
France	52,866	56,757	64,681	73,135	...	8,586	...	8,932	11,011	19,286	12,500	62,800	70,000
Iceland	61,110	118,131	196,992	155,876	126,018	234,990	99,850	148,887	187,665	221,843	60,315	131,720	216,948
Ireland	3,291	3,207	3,325	2,888	2,577	3,611	3,992	1,981	3,896	4,004	5,705	5,182	5,464
Japan	1,607,016	1,771,217	1,324,022	1,127,804	1,213,642	1,050,805	1,372,462	1,061,516	898,642	713,100	b/582,800	601,500	558,750
Netherlands	73,892	103,030	124,168	98,999	39,140	2,167	1,590	922	226	142	27,350	106,500	140,000
Newfoundland c/	...	11,630	10,704	12,891	13,995	27,492	16,121	19,188	26,603	36,563	61,591	73,541	41,720
Norway	633,225	709,599	532,309	710,031	625,892	801,006	548,541	503,904	430,007	419,796	553,268	510,490	635,547
Portugal	143,393	123,002	112,227	120,456	92,409	101,076	80,085	83,220	134,205	137,646	...	161,519	...
Sweden	62,513	68,355	76,933	76,667	86,645	59,429	70,169	74,985	84,810	81,059	...	88,200	73,400
United Kingdom d/	135,863	145,856	171,578	132,628	64,489	15,765	10,869	8,270	8,276	11,350	...	202,444	223,547
U.S.A. (Including Alaska)	859,520	1,037,523	894,597	854,204	964,094	788,362	1,069,923	743,327	822,711	948,719	821,037	773,383	...

Source: (1935-1945)

Belgium - 1935-37: Conseil permanent international pour l'exploration de la mer, Bulletin Statistique des Peches Maritimes, 1938, Copenhagen; 1938-45: Statistique de la Peche Maritime, Brussels.

Canada - Fisheries Statistics of Canada, Ottawa, Ontario.

Denmark - Fiskeri-Beretning, 1944, Copenhagen.

France - 1935-38: Bulletin Statistique des Peches Maritimes, 1938, Paris; 1940,1942-47: Peches Maritimes, Ministere des Travaux Publics et des Transports, Paris.

Iceland - Fiskiskyrslur og Hlunninda, Reykjavik.

Ireland - Report on the Sea and Inland Fisheries, Dublin.

Japan - General Headquarters Supreme Commander for the Allied Powers, Japanese Fisheries Production 1908-46, Tokyo.

Netherlands - 1935-39: Verslagen en Mededeelingen van de Afdeeling Visscherijen, 'S-Gravenhage; 1940-45: Bedrufschap voor Visscheruproducter, 's-Gravenhage.

Newfoundland - Newfoundland Fisheries Board, St. John's.

Norway - Norges Fiskerier, 1943, Oslo.

Portugal - Estatistica das Pescas Maritimas, Lisbon.

Sweden - Fiske, Stockholm.

United Kingdom - 1935-38: Conseil permanent international pour l'exploration de la mer, Bulletin Statistique des Peches Maritimes, 1938, Copenhagen; 1939-44: Fisheries in Wartime, London.

U.S.A. (Incl. Alaska) - U.S. Fish and Wildlife Service, Washington, D.C.

a/ FAO questionnaires, "Preliminary Report on Landings and Utilization".
b/ Reported landings. Actual landings were higher as some landings were not reported.
c/ Exports converted to round weight, including 1946.
d/ Great Britain only, with the exception of 1946 and 1947.

PRODUCTION OF FISH MEAL & FISH OIL

IN SOME COUNTRIES, 1935 - 1947

Table 21 gives the production of fish meal (excluding whale meal) for five countries — Canada, Iceland, Newfoundland, Norway, and the United States of America (including Alaska). The production is divided into two groups:

1. Herring meal, including meal from allied species.
2. Other fish meal.

In lieu of accurate production statistics, export statistics had to be used. Unfortunately, no statistics are available on the fish meal production of Japan except for 1937. Figures for this year, which are given in a note to Table 21, show that Japan's production was in excess of the aggregate production in the five countries listed above.

Before the outbreak of war, the aggregate production of herring meal in the five countries under review varied between 260,000 and 300,000 tons. Since 1942, it has dropped to a level of just over 200,000 tons. In all countries this production has been subject to extensive fluctuations: the U.S.A., for example, produced 186,000 tons of herring meal in 1936, but the output was only 120,000 tons in 1942. Iceland produced 25,000 tons in 1938 but less than 5,000 tons in 1945.

The output of fish meal, other than herring meal, remained fairly stable during 1935/37 and varied only between 50,000 and 65,000 tons during the years 1936/37. This relatively stable trend might be due to the fact that the larger part of the total comes from the United States and Canada, countries whose fisheries output was not much interfered with by war circumstances.

Table 20 gives the production of fish oil (excluding whale oil) in the same five countries, grouped as herring oil and all other fish oil. Fish oil, other than herring oil, is almost all liver oil.

The drop in Norway's production of liver oil during the war is balanced by an increase in the production of the U.S.A. and Canada. When Norway returned to its prewar production and, when Iceland even exceeded it, the aggregate production of "other fish oil" reached 36,000 tons in 1946.

Herring oil production is still far below prewar levels on account of smaller production in the U.S.A.

Table 20. - Production of Fish Oil a/ in Some Countries, 1935-1947
(Metric Tons, Product Weight)

Country	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946 b/	1947 b/
Grand Total (I & II)	...	193,296	156,299	177,800	177,779	157,129	171,519	133,551	147,503	163,083	143,505	135,714	127,590
Canada	10,271	10,714	14,679	15,322	8,924	13,951	13,484	14,203	16,935	17,020	14,865	8,173	6,362
Iceland c/	12,849	21,325	25,705	27,920	23,805	27,976	33,186	31,862	35,520	32,483	22,263	25,271	25,934
Newfoundland c/	...	3,147	2,796	5,004	3,692	5,417	3,454	2,964	4,588	4,037	3,959	7,251	4,097
Norway	32,304	34,637	21,943	34,955	30,152	32,951	20,485	13,556	10,953	11,786	20,510	28,881	38,877
U.S.A. incl. Alaska	105,706	123,473	91,176	94,599	111,206	76,834	100,910	70,966	79,507	97,757	d/81,908	d/66,138	d/52,320
I. Herring e/ Oil: Total	...	171,312	134,045	154,580	150,313	131,433	146,373	110,509	124,101	138,103	118,927	99,068	96,401
Canada	8,454	8,506	12,674	13,528	6,856	11,447	10,610	9,942	12,529	12,239	9,953	4,023	5,310
Iceland c/	7,760	15,156	20,549	22,827	17,367	22,435	27,762	26,526	29,970	26,430	13,888	17,534	20,527
Newfoundland c/	...	-	-	1,038	110	1,251	-	316	250	562	92	20	147
Norway	24,504	27,337	12,643	26,255	19,352	24,951	13,985	9,356	7,353	7,086	16,010	14,731	22,377
U.S.A. incl. Alaska	102,509	120,313	88,179	90,932	106,628	71,349	94,016	64,369	73,999	91,786	78,984	62,760	48,040
II. Fish Oil other than Herring e/Oil: Total	...	21,984	22,254	23,220	27,466	25,696	25,146	23,042	23,402	24,980	24,578	36,646	31,189
Canada	1,817	2,208	2,005	1,794	2,068	2,504	2,874	4,261	4,406	4,781	4,912	4,150	1,052
Iceland c/	5,089	6,169	5,156	5,093	6,438	5,541	5,424	5,336	5,550	6,053	8,375	7,737	5,407
Newfoundland c/	...	3,147	2,796	3,966	3,582	4,166	3,454	2,648	4,338	3,475	3,867	7,231	3,950
Norway f/	7,800	7,300	9,300	8,700	10,800	8,000	6,500	4,200	3,600	4,700	4,500	14,150	16,500
U.S.A. incl. Alaska	3,197	3,160	2,997	3,667	4,578	5,485	6,894	6,597	5,508	5,971	d/2,924	d/ 3,378	d/4,280

Sources: Iceland: Verzlunarskyrslur, Reykjavik, and Aegir, Reykjavik (1945-47).
Newfoundland: Report of the Newfoundland Fisheries Board, St. John's.
Norway: Norges Handel, Oslo; Norges Fiskerier, Bergen.
U.S.A.(Incl. Alaska): Fish and Wildlife Service, Washington, D.C.

a/ Excluding whale oil.
b/ Figures have been taken from FAO questionnaire, "Preliminary Report on Landings and Utilization" except for U.S.A. (incl. Alaska), Iceland, and Canada.
c/ Exports only.
d/ Excluding fish liver oils.
e/ Including allied species.
f/ Cod liver oil only.

Table 21. - Production of Fish Meal a/ in Some Countries, 1935-1947

(Metric Tons, Product Weight)

Country *	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946 b/	1947 b/
Grand Total (I & II)	...	359,023	325,705	338,161	341,078	349,707	331,553	262,764	255,837	277,436	264,419	265,229	270,975
Canada	19,923	26,051	29,413	26,206	24,826	36,567	27,278	31,726	30,114	26,613	28,586	20,085	16,486
Iceland c/	10,100	21,355	31,198	22,294	25,927	23,101	19,194	17,845	13,576	28,157	7,779	16,364	16,622
Newfoundland c/	...	168	62	284	2,012	772	330	1,802	1,736	1,687	1,110	2,637	2,018
Norway	89,669	91,368	66,852	103,760	83,660	113,956	69,894	56,242	37,716	27,627	58,750	58,601	72,049
U.S.A. incl. Alaska	191,477	220,081	198,180	185,617	204,653	175,311	214,857	155,149	172,695	193,352	168,194	167,542	163,800
I. Herring d/ Meal: Total	...	294,635	260,672	277,883	269,638	288,746	271,316	204,261	206,874	226,788	214,589	205,636	209,177
Canada	13,482	18,079	20,779	18,107	15,924	28,285	18,613	20,984	20,501	17,331	17,157	8,283	12,223
Iceland e/	5,324	12,462	25,448	17,900	18,752	22,137	15,072	14,985	12,630	27,040	4,928	10,195	11,155
Newfoundland e/	...	-	-	118	1,762	540	-	1,403	1,381	1,369	-	166	933
Norway	76,517	77,874	51,616	88,322	65,500	100,000	57,644	47,193	32,381	23,773	54,015	49,981	55,626
U.S.A. incl. Alaska	158,441	186,220	162,829	153,436	167,700	137,784	179,987	119,696	139,981	157,275	138,489	137,011	129,240
II. Fish Meal other than Herring d/ Meal: Total	...	64,388	65,033	60,278	71,440	60,961	60,237	58,503	48,963	50,648	49,830	59,593	61,798
Canada	6,441	7,972	8,634	8,099	8,902	8,282	8,665	10,742	9,613	9,282	11,429	11,802	4,263
Iceland c/	9,567	8,893	5,750	4,394	7,175	964	4,122	2,860	946	1,117	2,851	6,169	5,467
Newfoundland c/	...	168	62	166	250	232	330	399	355	318	1,110	2,471	1,085
Norway	12,652	13,494	15,236	15,438	18,160	13,956	12,250	9,049	5,335	3,854	4,735	8,620	16,423
U.S.A. incl. Alaska	33,036	33,861	35,351	32,181	36,953	37,527	34,870	35,453	32,714	36,077	29,705	30,531	34,560

Sources: Canada: Fisheries Statistics of Canada, Ottawa.
Iceland: Verzlunarskyrslur, Reykjavik, and Aegir, Reykjavik (1945-47).
Newfoundland: Report of the Newfoundland Fisheries Board, St. John's.
Norway: Norges Fiskerier and Fiskets Gang, Bergen.
U.S.A. (incl. Alaska): Fish and Wildlife Service, Washington, D.C.

* Unfortunately, statistics showing fish meal production in Japan are not available for more than one year (1937). Data for this year, however, show that the total fish meal production in Japan exceeded the total of all countries listed above: In 1937 Japan produced 591,785 metric tons of fish meal (whale meal not included), of which 430,127 tons was sardine meal, 27,897 tons was herring, 10,286 tons was codfish, 3,225 tons flatfish, and 120,340 tons other fish meal. In addition to this production, which was for food and animal feed, about 3,000 tons of fish fertilizer was produced.

a/ Whale meal not included.
b/ With the exception of U.S.A. (incl. Alaska), Iceland and Canada, these figures have been obtained from FAO questionnaires, "Preliminary Report on Landings and Utilization".
c/ Exports only. Including fish liver meal.
d/ Including similar species.
e/ Exports only.

ANNUAL REVIEW OF FISHERIES - 1947

Norway, 1947 1/

According to year-end calculations in the Norwegian Magazine Fiskets Gang, Norwegian fishermen, in the year 1947, landed 1,058,700 tons of fish, 2/ compared with 834,856 tons in 1946. The value to the fisherman in 1947 is computed to be 296 million Norwegian kroner as compared to the 1946 value of 200 million kroner. With the exception of the years 1938 and 1940, when the total landings amounted to 1,065,000 tons and 1,081,000 tons, the figures for the 1947 landings are the highest on record and the value of the 1947 landings surpasses all previous years. The next highest total value on record up to this time is for the 1916 landings which amounted to 188 million kroner. As the quantity in 1916 was much smaller, that year still has the highest value per ton on record.

Two factors account for these favorable figures for the total landings; (1) Although the winter herring fisheries started late, the total quantity landed amounted to 5.3 million hectoliters (about 530,000 tons); (2) favorably smooth but rather cold weather prevailed during the entire season.

The fat and small herring season, usually carried on from early summer to the end of the year, is described as a failure, as it was in the previous year. Norway participated in the herring fisheries of Iceland with 201 vessels making 222 trips. Of this number, 47 vessels used purse seine, 151 gill nets, and the remainder of the vessels were used for transport only. As a whole, the results are described as satisfactory with a total of 191,000 barrels of salted herring and an estimated value of 21 million Norwegian kroner.

During the summer months, 70 medium-sized vessels participated in trawl fishing for herring in the North Sea. This was the second year in which Norway took part in this kind of fishing, and, in spite of the fact that market difficulties were encountered for the new product, the experiment was considered a success.

The brisling (sprat) fisheries did not prove as successful as had been hoped.

During the spawning cod fisheries, the center of which is the Lofoten Islands, the landings were extremely profitable. Although this is more true of the Lofoten district than for other sections of the coast, the total quantity of spawning cod landed amounted to 206,000 metric tons, which is more than for any other year since 1926.

On account of the complete destruction of the county of Finnmark, the spring fisheries for cod in this district were not expected to be in line with prewar landings. Nevertheless, almost 23,000 tons were landed, compared with 13,000 tons during the previous year.

1/ Statistics in this survey are not converted to fresh round weight unless definitely stated.

2/ The whale and seal catch and fresh-water fisheries are not included in these figures.

With the exception of fishing grounds off Iceland, where only one Norwegian vessel was fishing in 1947 as against 78 in 1939, Norwegians resumed fisheries in distant waters which had been discontinued during the war, but not with the same degree of success. Norwegian longlining vessels made 109 trips to the Bear Island and Spitzbergen grounds, compared with 243 in 1939, but the fish did not strike these grounds in great abundance. For this reason also, otter trawl fishing is described as disappointing; the total landings by otter trawlers did not exceed 4,000 tons of wet salted cod. Four longlining vessels made seven trips to west Greenland grounds, compared with 24 vessels making 46 trips in 1939.

During the mackerel fisheries, record-breaking landings were realized. The landings of coalfish fisheries were below the normal landings and the shrimp fisheries are described as less successful.

Longlining along the coastal banks realized good catches but was very much hampered by stormy weather. Fishing for porbeagle was hindered by market difficulties and the activities were limited.

The following are statistics on the total production of end-products in the fisheries industry: 59,000 tons of salted cod and related species, dried basis (1946 - 50,000 tons); 87,900 tons of salted herring; 55,626 tons of herring meal; 16,423 tons of other fish meal; 22,377 tons of herring oil; 15,000 tons of stockfish; 19,615 tons of canned products; 12,500 tons of medicinal oil; 250,414 tons of round or drawn fish; and 15,028 tons of fresh or frozen fillet.

SOURCES: Fiskets Gang, Bergen, Statistisk-Økonomiske oversikt over aaret 1947, Oslo, and FAO, Preliminary Report on 1946 Landings and Utilization of Fish in Some Countries, Washington, D.C., 25 November 1947. (For comparative figures for 1930-1943 see FAO Yearbook of Fisheries Statistics - 1947; Table 159, p. 216, and Table 204, p. 280.)

Union of South Africa, 1947 3/

In the beginning of 1948, the South African fishing fleet consisted of 30 steam trawlers, 7 motor trawlers, 2 steam line-boats, 699 motor boats, 238 sailing and rowing boats over 3.9 meters (13 feet) in length and 1,243 dinghies under 3.9 meters in length. This total of 2,219 fishing craft along the 2,500 kilometer coastline is estimated to be worth about 8 million dollars at current prices.

The subscribed capital and reserves of the trawling interests increased from $3,800,000 in 1939 to $4,400,000 in 1944 and $6,200,000 in 1947. Those of the inshore interests increased even more -- from $2,900,000 in 1939 to $4,700,000 in 1944 and $15,060,000 in 1947. The total of subscribed capital and reserves in 1947 amounted to $21,260,000, with a current market value exceeding 40 million dollars.

3/ This review is supplementary to the one which appeared in the FAO Fisheries Bulletin, Volume I, No. 1, August 1948, pp. 5 and 6.

Available statistics pertain only to the landings of trawl-caught fish, which amounted to over 30,000 metric tons. An estimation of all landings of telostean fish (bony, finny, or scaled fish), elasmobranch fish (sharks), crustaceans (principally crawfish), and molluscs (negligible) amounts to a grand total of 95,000 metric tons. These figures are apparently based on the landed weight basis ex-vessel and the trawl-caught fish are dressed to various extents prior to being landed.

The most important trawl-caught species is the stockfish (Merluccius capensis) which accounted for 20,000 metric tons in 1946 and 19,000 metric tons in 1947. These figures refer to the landed ex-trawler weight, which is 68 percent of the round ex-water weight.

Pilchards (Sardina sagax), maasbankers (Trachurus trachurus), snoek (Thyrsites atun), and crawfish (Jasus lalandii) are caught by the nets and lines of the West Coast inshore fishermen. The landings of crawfish amount to about 11,000 tons on the ex-water-weight basis; the net-caught maasbankers account for about 7,000 tons on the ex-water-weight basis and the landings of line-caught snoek are about 9,000 tons.

The greatest development during the past few years in the South African fisheries has been the rapid expansion of the pilchard fisheries along the west coast. In 1939 the landings of pilchards were negligible and economically insignificant. During the war and postwar years plans had been established to convert the pilchards into meal and oil and, in addition, factories adapted themselves for the canning and freezing of pilchards for human consumption. These West Coast factories have created an enormous demand for the fish and the inshore fishermen have landed an estimated quantity of 32,000 tons of pilchards in 1947.

SOURCE: Presidential Address by Dr. S.H. Skaife to the South African Association for the Advancement of Science; reported in The South African Shipping News and Fishing Industry Review, Vol. 3, No. 7, July 1948. (For comparative figures, 1933-1945, see FAO, Yearbook of Fisheries Statistics - 1947, Table 165, p. 229.)

COMMENTS ON TRADE STATISTICS

Canada, January-May 1948

Table 23 shows that Canada's exports of fresh and frozen fish for the first five months of 1948 increased from last year's 20,000 tons to 30,500 tons in the corresponding period in 1948. The increase in dried, salted or smoked fish was small -- exports amounting to 10,000 tons in 1947 and 11,500 tons in 1948. The exports of canned fish, nearly 20,000 tons in January-May 1947, dropped to 9,600 tons in 1948. This decrease was caused principally by the decline of canned sea herring. The exports of crustaceans and molluscs show an increase of about 1,000 to 4,354 tons in the 1948 period of five months.

Denmark, January-June 1948

Denmark's exports continue to show a tendency to increase. (See Table 24) In 1948, 38,000 metric tons of fresh fish were exported compared with 34,000 metric tons during the corresponding six months in 1947. Salted, dried, or smoked fish, (salted herring, klipfish, and similar products), accounted for 9,600 tons in 1947 and 12,300 tons in 1948. The exports of canned fish (489 tons in 1947) amounted to 1,238 tons in 1948.

Denmark imported very little canned fish in 1948 (see Table 26); its small imports of cured fish amounted to about 3,000 tons in the January-June periods of both 1947 and 1948. The imports of fresh fish show an increase; during January-June 1947 only 2,100 tons were imported, while in January-June 1948, 4,900 tons were imported.

Iceland, January-July 1948

During the seven-month period of 1948 as compared with the same period in 1947, Iceland exported an increasing amount of fresh or frozen fish to the end of July 1948; Iceland exported 87,000 tons which is equal to twelve months export in 1947. Iceland's exports of dried, salted fish remained at the same level. Exports of canned fish remained comparatively negligible. Its exports of fish meal and fish oils show large increases; during the first seven months of the current year 33,000 tons of fish meal and 25,500 tons of fish oil were exported as compared with the 1947 seven-months' figure of 7,600 tons of fish meal and 5,000 tons of fish oils.

Norway, January-June 1948

The highly successful Norwegian herring fishery is reflected in the great increase in the exports of herring products during the six-month period, January-June 1948, as compared with the corresponding period of 1947. (See Table 26.) This year, during these months, Norway's exports of fresh or frozen herring amounted to nearly 130,000 tons (compared with 84,000 tons in 1947). Salted herring exports accounted for 79,000 tons compared with 58,000 tons in the same period in 1947. The exports of dried salted fish (klipfish) amounted to 18,600 tons compared with 12,800 tons in January-June 1947. Canned fish exports accounted for 20,500 tons which slightly exceeded the 1947 quantity. Fish meal export went down from 3,500 tons in 1947 to 360 tons in 1948.

United States of America, January-May 1948

Table 22 shows that in the period January-May 1948 the United States exports of fresh and frozen fish were 1,000 tons more than in the corresponding period of 1947. Exports of salted, pickled, or dry-cured fish declined by 50 percent. Canned fish exports dropped from 50,200 tons in 1947 to 16,500 tons in 1948.

Table 22. - United States of America: Exports of Principal Fisheries Products
Metric Tons, Exported Weight, Unless Otherwise Indicated

Item	1938	1946	1947	January-May	
				1947	1948
Fish, fresh or frozen	3,598	859	1,164	602	1,657
Fish, salted, pickled or dry-cured	1,732	7,416	2,116	993	417
Fish, canned	40,416	72,888	83,275	50,201	16,447
Crustaceans and molluscs	6,358	13,537	9,918	4,529	3,239
Marine oils	1,214	7,740	10,295	3,859	4,781
Fish meal for feed	1,298	59	524	290	11
Buttons of pearl or shell - Gross	-	398,265	357,970	195,613	92,209
Fur seal, dressed or dyed - Number	5,380	9,572	13,992	10,259	3,267
Other fisheries products	34,346	27,209	39,595	16,402	11,087

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 141, pages 173-175, for years 1930-1943: Fishery Industries of the United States, 1930-1938; Fishery Statistics of the United States, 1939-1944, Washington, D.C.; 1946: United States Exports of Domestic and Foreign Merchandise, Department of Commerce, Washington, D.C. (annual reports); 1947 and January-May 1947 and 1948: United States Exports of Domestic and Foreign Merchandise, Dept. of Commerce, Washington, D.C. (monthly reports).

Table 23. - Canada: Exports of Principal Fisheries Products, January-May 1948 and 1947, and Calendar Years 1938, 1946, and 1947
Metric Tons, Exported Weight, Unless Otherwise Indicated

Item	1938	1946	1947	January-May	
				1947	1948
Fish, fresh and frozen: Total	49,871	94,604	86,849	19,696	30,533
Sea herring	6,928	41,863	33,953	2,951	7,040
Other fish	42,943	52,741	52,896	16,745	23,493
Fish, dried, salted, or smoked	42,373	38,828	34,957	10,022	11,472
Fish, canned: Total	28,403	39,531	39,891	19,812	9,595
Sea herring	1,467	15,409	27,017	11,309	3,758
Other fish	26,936	24,122	12,874	8,503	5,837
Crustaceans and molluscs	9,008	9,547	7,690	3,460	4,354
Fish oil	14,165	...	...	...	...
Whale oil	1,937	...	...	...	...
Seal skins, undressed - Number	18,746	...	...	...	...
Other fisheries products	21,970	...	...	...	...
Unclassified a/	-	55,957	46,980	25,654	36,234

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 23, pages 24-27, for years 1930-1944: Fisheries Statistics of Canada, Ottawa; 1946 and 1947: Monthly Review of Canadian Fisheries Statistics, Ottawa (January 1948); January-May 1947 and 1948: Monthly Review of Canadian Fisheries Statistics, Ottawa (June 1948).

a/ This group may contain commodities which in the final report will appear under the above-mentioned subheads.

Table 24. - Denmark: Imports of Principal Fisheries Products, January-June 1948 and 1947, and Calendar Years 1938, 1946, and 1947

Item	1938	1946	1947	January-June 1947	January-June 1948
	·····Metric Tons, Imported Weight·····				
Fish, fresh: Total	14,298	1,745	5,352	2,101	4,940
Herring	...	...	3,448	1,283	3,569
Other	...	...	1,904	818	1,371
Fish, salted, dried, or smoked: Total	9,029	5,243	11,050	3,612	3,364
Herring, salted	3,870	1,889	2,315	1,175	786
Klipfish and similar products	3,812	2,752	8,373	2,412	2,571
Other	1,347	602	362	25	7
Fish, canned: Total	511	65	111	46	44
Sardines	289	5	35	25	1
Other	222	60	76	21	43
Crustaceans and molluscs	259	81	81	31	33
Fish meal	a/3,438	3,188	2,906	583	5,795
Marine oils: Total	46,311	6,345	12,965	6,642	10,643
Fish oil	10,024	483	868	378	1,252
Medicinal and edible oil	1,263	890	1,640	527	227
Whale oil	34,923	4,547	10,282	5,587	9,164
Seal oil	101	425	175	150	-
Other fisheries products	794	474	1,259	330	512

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 38, pages 41 and 42, for years 1930-1936: Vareindførsel og Udførsel, Copenhagen and Table 39, page 42, for years 1937-1946: Vareomsaetningen med Udlandet, Copenhagen; 1947 and January-June 1947 and 1948: Vareomsaetningen med Udlandet, Copenhagen.

a/ Includes meat meal and bone meal.

Table 25. - Denmark: Exports of Principal Fisheries Products, January-June 1948 and 1947, and Calendar Years 1938, 1946, and 1947

Item	1938	1946	1947	January-June 1947	January-June 1948
	·····Metric Tons, Exported Weight·····				
Fish, fresh: Total	49,945	82,295	81,797	34,113	38,045
Cod and haddock	8,822	27,339	25,160	14,152	14,412
Herring	11,209	1,256	4,988	4,026	3,193
Plaice and similar fish	22,764	49,022	39,786	12,837	15,842
Other	7,150	4,678	11,863	3,098	4,598
Fish, salted, dried, or smoked: Total	...	...	15,413	9,564	12,298
Herring, salted	...	...	5,262	4,429	5,127
Klipfish and similar products	2,125	4,825	9,500	4,814	6,601
Other	a/2,420	a/7,851	651	321	570
Fish, canned: Total	391	251	1,489	489	1,238
Sardines	...	...	2	2	-
Other	...	...	1,487	487	1,238
Crustaceans and molluscs	b/	b/	38	26	244
Fish meal	...	...	50	50	-
Marine oils: Total	...	...	669	77	656
Fish oil	1,830	513	360	40	314
Medicinal and edible oil	...	...	31	21	78
Whale oil	...	...	270	8	264
Seal oil	...	...	8	8	-
Other fisheries products	...	...	10,168	3,968	4,052

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 40, pages 43 and 44, for years 1930-1936: Vareindforsel og Udforsel, Copenhagen, and Table 41, page 44, for years 1937-1946: Vareomsaetningen med Udlandet, Copenhagen; 1947 and January-June 1947 and 1948: Vareomsaetningen med Udlandet, Copenhagen.

a/ Includes other fish, crustaceans, and molluscs.
b/ Included with "Other fish, salted, dried, or smoked".

Table 26. - Norway: Exports of Principal Fisheries Products, January-June 1948 and 1947, and Calendar Years 1938, 1946, and 1947

Item	1938	1946	1947	January-June	
				1947	1948
	Metric Tons, Exported Weight				
Fish, fresh or frozen: Total	a/119,885	a/80,764	a/136,001	a/117,080	163,467
Herrings, fresh or frozen	a/96,116	a/55,827	a/85,389	a/83,664	b/129,813
Other fish, fresh or frozen	a/23,769	a/24,937	a/50,612	a/33,416	c/33,654
Fish, dried, salted, etc.: Total	113,702	181,082	166,899	81,747	106,950
Herrings, salted	34,630	101,384	92,873	d/57,965	e/78,736
Dried salted fish (klipfish)	41,438	27,268	45,335	12,771	18,602
Stockfish	26,002	12,602	13,503	2,803	4,807
Other fish, wet salted	5,887	35,133	10,011	6,671	2,151
Roe, salted	5,745	4,695	5,177	f/1,537	f/2,654
Fish, canned	26,359	26,037	33,809	19,154	20,501
Fish meal: Total	79,297	9,472	7,145	3,498	360
Herring meal	67,088	4,433	1,000	1,000	-
Other fish meal	12,209	5,039	6,145	2,498	360
Herring oil	7,472	1,348	3,013	1,484	1,334
Codliver oil, medicinal	8,350	13,235	9,549	5,522	2,604

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 94, pages 110-116, for years 1930-1946, and Table 95, pages 117 and 118 (Reexports) for years 1930-1938: Norges Handel, Oslo; 1946: Fiskets Gang, Bergen; 1947 and January-June 1947 and 1948: Maanedsoppgaver over Vareomsetningen med Utlandet, Oslo.

a/ Fresh.
b/ Comprising 108,276 tons of fresh and iced herring and 21,537 tons of frozen herring.
c/ Comprising 25,787 tons of fresh and iced fish, 5,176 tons of frozen fish fillets, and 2,691 tons of frozen round fish.
d/ Including 82 tons of seasoned and spiced herring and 1,062 tons of smoked herring.
e/ Including 45 tons of seasoned and spiced herring, one ton of seasoned and spiced sprats, and 810 tons of smoked herring.
f/ Salted cod roe, only.

COMMENTS ON CURRENT FISHERIES - 1948

Iceland, January-July 1948

Landings figures for Iceland from January through July 1948 are, in the aggregate, slightly higher than the previous year. (See Table 23.) As mentioned in a previous report, landings of cod were lagging, but there is a slight increase in the landings of haddock, plaice and a considerable increase in the landings of saithe, catfish and redfish. Landings of herring amount to exactly the same quantity as in 1947. Total landings in the period under consideration amounted to 277,000 tons in 1948, compared with 271,000 tons in 1947 and 260,000 tons in the same period in 1946.

The most radical changes are to be found in the utilization of the catch, when comparing the first seven months of 1948 with the same period for the two previous years. As much as 78,000 tons of eviscerated fish was exported on ice in fishing vessels, compared with 35,000 tons in 1947, and 45,000 tons in 1946. The quantity of fish which was frozen only slightly exceeded the quantity reached the previous year. There is a serious drop in the quantity of fish salted in 1948; 23,000 tons were salted compared wi 66,000 tons the previous year. The same quantity as the previous year was used for oil and meal production.

The North-Coast herring fisheries of Iceland were again a complete failure this year, as the three previous years, this year being the worst one.

In early July about 240 large and small boats started the summer herri season with purse-seine-nets (compared to 264 in 1947). The month of July proved a complete failure giving only about 7,000 barrels of salt-cured herring and 140,000 hectolitres herring for oil and meal production. August proved slightly better, but now as the season is drawing to a close, the total catch only amounts to 111,167 barrels salt-cured herring (61,740 in 1947), 411,807 hectolitres herring for oil and meal production (1,249,467 hectol. in 1947) and 11,905 barrels 4/ herring for bait (12,296 barrels in 1947).

The main part of the catch was caught in the later half of August this year when the herring had become good and fat; consequently a greater amount went to the salt-herring-curers than last year when most of the cathh was caught in July when the herring still was lean.

SOURCE: Communication from Fiskifelag Islands, Reykjavik.

4/ Conversion factor for barrels not known but it might equal 1.5 hectoliter

Denmark, January-July 1948

Landings in Denmark by Danish fishing craft almost reached 110,000 tons in January through July, compared with 94,000 tons during the same period the previous year. The increase is partly due to increased landings of herring and allied species. There is some increase in landings of flatfishes, but mainly of "other species". The landings which Danish fishermen made in British harbors amounted to about 9,000 tons in 1948, which is almost equal to the 1947 landings over the same period.

United Kingdom, January-May-July 1948

Figures for landings by British fishermen are available for England, Wales, and Scotland from January through May. (See Table 29.) There is a noticeable increase from 336,000 tons in 1947 to 366,000 tons in 1948, mainly because of increased landings of herring and allied species. There was a drop in landings of flatfish, but some increase in landings of mackerel, cod and allied species, crustaceans and molluscs, etc., and "Other species".

For England and Wales (excluding Scotland) landing statistics are available from January through July, and these are given in the last two columns of Table 29. Here, also, there is a significant increase from 1947 to 1948, mainly because of increased landings of cod and allied species and the group "other species".

Canada, July 1948

In July 1948, Canadian landings of sea fish amounted to 63,000 metric tons, valued at 8,953,000 Canadian dollars. The quantity is 8 percent and the value 29 percent higher than in July 1947.

The output of groundfish on the Atlantic coast and the landings of sardines, mackerel and lobster show increases over the output in July 1947; the herring catch, however, shows a considerable decrease.

Most of the Pacific species show increases and the output of canned salmon, except sockeye, was higher in July 1948 than in the corresponding month of last year. When considering the size of the sockeye output, the four-year cycle has to be kept in mind.

Although cold storage holdings show a decline, more fish tend to be marketed as frozen fillets; more Atlantic herring was sold as fresh with a corresponding drop in the smoked and brine-cured (pickled) herring. The output of wet-salted cod shows an increase in July 1948 when compared with the July 1947 output.

SOURCE: Dominion Bureau of Statistics, Monthly Review of Canadian Fisheries Statistics, July 1948.

Table 27. - Landings by Danish Fishing Craft
(Metric Tons, Round Fresh Weight)

Species	Calendar Year			January-July*	
	1938	1946	1947	1947	1948
A. In Denmark·····GRAND TOTAL	89,843	197,400	205,400	94,290	109,855
Cod and allied species:	24,058	68,000	55,000	...	...
Cod	19,299	...	...	34,649	32,605
Herring and allied species: Total	14,525	27,500	32,000	15,360	17,573
Herring	14,525	...	...	11,984	15,496
Sprats	-	...	...	3,376	2,077
Tunas	-	630	300	...	...
Mackerels	5,973	7,200	11,000	5,379	5,067
Flatfishes: Total	30,419	66,700	61,000	...	...
Dab	3,520	...	...	1,744	1,708
Flounder	3,406	...	...	1,731	2,592
Plaice	21,616	...	...	14,235	16,028
Salmon, trout and similar species: Total	123	1,400	1,700	...	...
Pond trout	64	900	1,000	543	642
Molluscs and crustaceans: Total	591	2,900	3,000	1,209	1,737
Mussels, with shells	-	...	...	263	673
Crustaceans	591	...	...	946	1,064
Sharks	-	1,800	4,000	...	...
Other species: Total	14,154	21,270	37,400	a/19,440	a/31,903
Eel	3,645	...	...	1,001	976
Garfish	2,099	...	...	1,000	1,340
Other fresh-water fish	b/	270	400	612	753
Other salt-water fish	b/c/8,410	21,000	37,000	a/7,577	a/8,475
Fish for reduction purposes	...	...	...	9,250	20,359
B. Direct in British Harbors: Total	5,431	...	...	9,158	8,989
Cod	82	...	...	1,409	826
Dab	690	...	...	632	-
Haddock	810	...	...	-	-
Plaice	3,062	...	...	6,675	6,739
Other salt-water fish	787	...	...	442	1,424

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 146, pages 190 and 191, for years 1930-1944: Fiskeri-Beretning, Copenhagen; 1946 and 1947: FAO questionnaires, Preliminary Report on Landings and Utilization; January-July 1947 and 1948: Oversigt over Fiskeriet (monthly) from Ministry of Fisheries, Copenhagen.

* In addition to the grand total for Danish landings in Denmark, foreign fishermen landed 1,976 tons in January-July 1947 and 4,865 tons in 1948. About 66 percent and 70 percent, respectively, were herring and similar species.

a/ May include species related to cod, tuna, flatfish (other than those listed), salmon and sharks.
b/ "Other fresh-water fish" may be included with "other salt-water fish".
c/ Includes deep-sea lobsters.

Table 28. - Landings in Iceland

Species	Calendar year			January-July		
	1938	1946	1947	1946	1947	1948
	Metric tons, eviscerated, heads on a/					
od	76,239	154,750	151,368	137,545	132,677	120,315
usk	256	502	453	478	421	339
addock	2,380	9,038	12,992	7,509	9,752	10,402
ing	892	1,518	4,586	1,328	3,923	3,438
ollock	-	171	12	150	10	173
aithe	9,464	16,090	26,124	5,388	9,164	18,158
erring	155,876	131,722	216,948	98,770	105,703	105,434
laice	1,606	2,559	3,333	1,348	1,686	2,391
kate	85	172	83	161	54	76
emon sole	-	577	807	512	615	669
atfish	921	4,181	5,423	3,656	3,949	8,558
edfish	b/459	4,261	8,227	2,499	2,246	6,768
alibut	...	736	808	446	395	725
egrims	...	2	6	1	2	10
Total	c/248,178	326,279	431,170	259,791	270,597	277,456
tilization:						
Exported iced:						
In fishing vessels	...	53,727	72,346	44,732	34,709	78,056
In cargo vessels	...	36,954	2,332	33,975	1,294	7,132
Frozen	...	73,113	71,147	64,666	64,820	65,815
Salted	...	47,440	75,105	22,581	66,287	23,087
Canned	...	1,055	318	736	303	376
Fresh domestic consumption	...	2,472	2,513	1,541	1,488	1,639
For oil and meal	...	105,507	200,603	90,785	101,009	101,048
Other use	...	6,011	6,806	775	688	301

urce: See FAO Yearbook of Fisheries Statistics, 1947, Table 149, pages 196 and 197, for years 1930-1941: Fiskiskyrslur og Hlunninda, Reykjavik; 1946 and 1947: Aegir, Reykjavik (February 1948); January-July 1946-1948: Special reports from Fiskifelag Islands, Reykjavik.

Except for herring which is measured in round fresh weight.
1939.
Some of the less important species are not included in this table. This total therefore somewhat smaller than the total found in Iceland's complete statistics r this year.

Table 29. - Landings in the United Kingdom a/ by British Fishermen for the years 1938, 1945, 1946 and 1947; January-May 1948 Landings Compared with January-May 1947; and Landings in England and Wales for January-July 1948 Compared with January-July 1947
(In Metric Tons b/)

Item	1938	1945	1946	1947 c/	January-May		January-July d/	
					1947 c/	1948 c/	1947 c/	1948 c/
TOTAL e/	1,087,052	516,758	907,735	1,030,343	335,588	365,899	373,243	387,315
Cod and allied species	581,864	244,336	526,030	573,977	224,431	229,857	264,466	278,640
Herring and allied species	282,309	127,513	207,508	229,175	18,802	38,800	10,813	8,439
Mackerels	10,218	3,709	3,171	3,633	198	994	512	2,087
Flatfishes	80,253	75,495	96,652	96,391	41,300	36,832	48,061	42,131
Molluscs, crustaceans, etc. e/	24,713	17,448	22,991	20,686	7,398	8,324	9,280	9,808
Sharks	8,340	4,090	5,633	6,990	1,427	2,039	2,285	3,498
Other species	64,824	36,110	52,439	73,960	29,848	35,739	21,988	25,158
Miscellaneous f/	34,531	8,057	23,311	25,531	12,184	13,314	5,838	17,554

Sources: See FAO Yearbook of Fisheries Statistics, 1947, Table 166, pages 230-233, and Table 167, pages 234 and 235, for years 1930-1946. Data converted from material contained in: Fishery Board for Scotland, Sea Fisheries Statistical Tables, Edinburgh; Ministry of Agriculture and Fisheries, Sea Fisheries Statistical Tables, London; Scottish Home Department, mimeographed statement, Edinburgh; Ministry of Agriculture and Fisheries, Monthly Return of Sea Fisheries, England and Wales, London; The Fishing News, Vol. XXXVI, Nos. 1838 and 1839.

a/ England and Wales, and Scotland. Northern Ireland not included.
b/ These statistics are not converted to round fresh weight; they are given as reported in the statistics concerned.
c/ Preliminary.
d/ England and Wales, only.
e/ Excluding quantities of crabs, lobsters, oysters, and crawfish.
f/ Fish roe and fish liver.

Table 30. - Iceland: Exports of Principal Fisheries Products, January-July 1948 and 1947, and Calendar Years 1938, 1946, and 1947

Item	1938	1946 a/	1947	January-July 1947	January-July 1948
	Metric Tons				
Fish, fresh or frozen: Total	17,430	96,710	87,617	40,029	87,074
Herrings, fresh or frozen	82	b/48	c/867	c/392	c/3,412
Other fish, iced or frozen	17,135	96,662	86,750	39,637	83,659
Fish roe:					
Refrigerated	174	d/	d/	-	-
Frozen	39	d/	d/	-	3
Fish, dried, salted, etc.: Total	80,248	28,769	34,076	12,693	11,591
Herrings, salted	e/32,887	15,866	5,663	486	186
Other fish, salted, not dried	22,724	f/11,196	g/26,623	h/11,045	i/8,623
Fish, dried salted (klipfish)	21,593	16	30	-	1,251
Fish, dried (stockfish)	470	108	ø	ø	ø
Roe, salted	j/2,574	1,583	1,760	1,037	697
Fish, canned	15	514	340	125	834
Shrimp, canned	62	...	...	...	...
Fish meal: Total	22,294	16,364	16,622	7,621	32,946
Herring meal	17,900	10,195	11,155	3,357	32,186
Other fish meal	4,394	6,169	5,467	4,264	760
Marine oils: Total	28,763	25,292	25,934	5,001	25,459
Herring oil	22,827	17,534	20,527	2,463	21,054
Redfish body oil	378	18	-	k/	k/
Other fish oil	4,715	7,737	5,407	2,538	4,405
Whale oil	843	3	-	...	...
Whale products	897	...	...	...	...
Other fisheries products	l/536	m/67	...	...	...

Source: See FAO Yearbook of Fisheries Statistics, 1947, Table 60, pages 69-73, for years 1930-1944: Verzlunarskyrslur, Reykjavik; 1946 and 1947: Aegir, Reykjavik (February 1948); and January-July 1947 and 1948: Special reports from Fiskifelag Islands, Reykjavik.

a/ Figures published in FAO Fisheries Bulletin No. 2 (trial run) have been revised.
b/ Frozen.
c/ Iced and frozen.
d/ May be included with "Other fish, iced or frozen".
e/ Including smoked herring.
f/ Including 288 tons of fish, salted in barrels.
g/ Including 23 tons of salted fish fillets.
h/ Including one ton of salted fish fillets.
i/ Comprising 7,320 tons of wet salted fish, 168 tons of specially cured wet salted fish, 394 tons of fish, salted in barrels, and 741 tons of salted fish fillets.
j/ Salted cod roe, only.
k/ May be included with "Other fish oil".
l/ Comprising dried fish bones, fish livers, dried and salted fish maw, and dried fish waste.
m/ Salted fish skins.

SURVEYS OF WORLD FISHERIES

In this issue this section covers the British West African Colonies, Protectorates, and Trust Territories -- Gambia, Sierra Leone, Gold Coast, Togoland, Nigeria, and British Cameroun. In future issues, similar surveys will be undertaken. In the beginning, attention will be mainly focused on those areas about which relatively little information has yet been made available.

Nigeria

Fishing both in inland waters and in the sea is carried out exclusively by Nigerian fishermen and fisherwomen using nets and traps. The only type of fishing boat employed is the dug-out canoe, with paddles or sails. All inland waters are heavily fished, and no effective conservation measures are applied. There is considerable variation in the productivity of inland waters. Fishing in the open sea is not extensively practiced, the generally accepted reason being that, as there are vast areas of sheltered waters and creeks, the coastal fishing-people prefer not to risk the hazards of the sea. The 23 estuaries are heavily fished, some, in spite of intensive fishing, giving consistently better results than others.

All fish cured are consumed locally, and the greater part of the catch is cured by heat and smoke, giving a product much appreciated by the people. The product is kept for some ten days only, and the demand for it is so great that a longer keeping quality is unnecessary. The Bedde tribe of the Kano River prepare and store powdered fish in sealed pots; this is made for their own consumption as well as for trading purposes. The demand for both fresh and smoked fish greatly exceeds the supply, and there is consequently no export of fish. On the contrary, there is a large import of dried unsalted fish and canned fish. Table 96 of the FAO Yearbook of Fisheries Statistics - 1947, p. 119, gives the annual imports of Nigeria of fisheries products during 1930-1944. Except for the last three years (war years) Nigerian imports of dried, salted, or smoked fish varied annually between 7,000 and 15,000 tons valued in amounts ranging from 180,000 to 600,000 pounds sterling. Canned fish imports varied during 1930-1944 between 100 and 1,700 tons.

The total catch of fish in the Lagos area in 1946 was much below the annual catch of the two previous years. Fishermen attribute this to the shortage of rain during the year.

There are two forms of development of the fishing industry, the possibilities of which the government is considering. The first is fish-farming, on which exploratory work has continued at Lagos during the year and which has been combined with a training school for fishermen. The second is that of trawling. A small motor boat for fishing is being

tried out in the inland waters, and it is intended to conduct further experiments with a full-sized sea-going trawler. A fisheries school is to be established at Lagos.

SOURCES: United Kingdom, Colonial Office, Annual Report on Nigeria for the Year 1946, His Majesty's Stationery Office, London, 1947; FAO Yearbook of Fisheries Statistics - 1947, Washington, D.C., 1948. E.B. Worthington: Science in Africa. Oxford University Press, London, 1938.

Sierra Leone

Sea-fishing is carried out by many different methods, both by net and line. The cast-net is the most productive method, being used for catching "bonga"(Ethmalosa fimoriata), which is never entirely absent, and is caught in larger quantities than any other single species. The bonga in the dried state supplies most of the inland markets and is almost the only fish available for up-country consumers, whose requirements are greater than the available supply. The average annual yield from this method is estimated at 1,500 tons and the number of boats or canoes employed is approximately 400. By other methods of sea-fishing it is estimated that an average of over 3,000 tons is caught annually. Total landings are approximately 5,000 tons per year.

Trawler-fishing is being carried out by the government on an experimental basis. The vessel used is the "Maid Honor", a wooden vessel originally built and rigged as a Brixham type of sailing-smack. The crew consists of an European skipper, two African engineers and ten deck-hands. Catches in 1946 amounted to 26 metric tons of varied types, valued at over $3,400, but the vessel only commenced intensive fishing in July, when the European skipper was appointed. The best haul for one month so far was 7,850 kilograms in December. The vessel is not entirely suitable, and it is considered that with the right type of craft the tonnage of fish caught would be considerably increased and become a commercial proposition.

Extraction of shark-liver oil from sharks caught by a local fisherman presents an interesting possibility for commercial development. A specimen sent to the United Kingdom for examination was found to be of very high vitamin content. Further developments await the arrival of a fishery expert and the necessary equipment for shark-fishing and extraction of the oil.

There are no co-operative societies in active existence.

SOURCE; United Kingdom, Colonial Office, Annual Report on Sierra Leone for the Year 1946, His Majesty's Stationery Office, London, 1947.

The Gold Coast

The fisheries industry along the coastline of the Gold Coast gives employment to several thousands of fishermen. Some 50,000 men and about

800 canoes catch in an average year about 20,000 tons of tunny, shark, sailfish, bream, etc. Grouper, snapper, and sea bream occur in patches and are caught by deep sea handlines from surf-riding canoes and, if a closely populated area is located, good catches are made. The craft leave with the land winds after midnight to return the next afternoon with the sea breeze. This kind of fishing is of some importance in the Gold Coast region where 8-meter surf-riding canoes with a large lifting sail spread by a mast and two sprits are used. Trolling is done only occasionally for mackerel (Scomberomerus) and jacks (Carangidae).

On inshore waters bottom fish are taken by set gill nets of which there are about a half-dozen types along the Gold Coast. Drifted gill nets have reached a high degree of development here and are workdd at times as ring nets. Beach haul seines, catching a variety of inshore species, are universal wherever the beaches and the adjacent seas are suitable for their operation.

Of the pelagic species, "bonga" or "shad" (Ethmalosa dorsalis) are encountered at times as far East as the Gold Coast where they are sometimes caught in the sardine or herring nets. However, the most highly developed fishery in British West Africa is the sardine fishery. Herring (Sardinella cameronensis; S. aurita) are found off these coasts where there is no great inflow of fresh water from the rivers. The principal gear here is the "ali" which is a large gill net (110-293 meters long by 18-27 meters deep) which is operated in August and September at nighttime as a straight drifted gill net to catch Sardinella aurita; during most of the other months it is used in the daytime as a ring net to catch, principally, the small schools of Sardinella cameronensis which have to be located and sighted.

In the inland areas fishing is also being undertaken by the native tribes living along the rivers. The shortage of ropes and nets, resulting in high operating expenses for the fishermen, is preventing them from obtaining full benefit from the increased fish prices. Attempts to introduce sisal in 1928 were not carried through but sisal growing continued until the area in cultivation was cleared for military purposes. There is now a lack of material for a local rope-making industry to supply the needs of the fisheries.

The catch of the sea fisheries is partly consumed immediately as fresh fish but a larger part is marketed as dried or smoked fish; a smaller quantity is salted and then sun-dried. The process of hot smoking without the use of salting has evolved locally in the fishing villages where preservation has to be achieved before the product can be transported in bales to the inland market centers by rail and road. In the Gold Coast the fish is grilled and smoked in ovens of baked mud. It appears that these processing units can be so readily increased that only if new, but cheaper, catching methods are introduced successfully on a large scale will there be a need for new, additional processing methods to cure the surplus catch.

Tables 55 and 56 of the FAO Yearbook of Fisheries Statistics - 1947 furnish detailed figures of the fish imports and re-exports of the Gold Coast; there were no fish exports recorded and re-exports were very small. Imports consisted principally of dried, salted and smoked fish, and canned

fish. Imports of the latter commodity were at times as large as, or even larger than, the imports of the cured fish. Before the outbreak of war, between 1930-1939, the annual amounts of imports of salted, dried, or smoked fish averaged 2,479 tons; canned fish imports averaged 2,489 tons.

During the war years, investigations were made to encourage the sound economic development of the industry. In 1945 the Osu Fisheries Station was established on the coast of Accra. Experiments to determine the suitability of motored surf boats were started in 1946; although it proved to be a more efficient fishing craft, its sea-worthiness to cope with stormy weather at open moorings was doubtful. This craft had then to be transferred to Takoradi Harbour.

The Osu Stations also experimented with salting and smoking techniques. The technologically preferable method of preservation by means of salting is practical as salts can be obtained from the salt pans; the techniques have been experimentally developed. The introduction was not successful as the demand for the salted products is not great. The Norwegian "stockfish" (dried but not salted) is preferred to any of the dried, salted cod and allied species.

The introduction of canning proved to be a great success and the local demand for herring packed in pepper and tomato sauce exceeded the supply. Plans for establishing canneries were developed in 1946; supplies are to be obtained from motor-propelled craft and from co-operative groups of canoe fishermen. It appears that this form of co-operative organization has been fairly successful in Accra. Surveys are being made among the fishermen to ascertain if and how co-operatives can be beneficial to them.

The Gold Coast Fisheries are served by the government chemist, who is the Officer-in-Charge of Fisheries, assisted by the Fisheries Officer. This Department of Fisheries will perform extension work, do research, and collect statistical data along the same lines as the Departments of Fisheries of the other three British West African colonies. The work of all four will be co-ordinated by the establishment of a British West African Fishery Research Institute, probably in Sierra Leone under the initiation of the Fisheries Adviser to the United Kingdom, Secretary of State for the Colonies.

SOURCE: Summaries from - United Kingdom Colonial Office; Annual Report on the Gold Coast for the Year 1946, London, 1948; FAO Yearbook of Fisheries Statistics - 1947, Washington, D.C., 1948; Nigeria Customs Department, Trade Reports, Accra. Annual. H.H. Brown, Annex to Gouvernement general de l'Afrique-Occidentale francaise, Conference de la Peche maritime, Dakar, 15-22 1948, Paris, C.N.I.E. 1948. Robert B. Houston, U.S. Fish and Wildlife Service, Fishery Leaflet 251, Gold Coast Fisheries, August 1947.

Gambia

There is no organized local fishing industry in Gambia. Fishermen operating canoes catch fish quite abundantly in the coastal district. Experiments in salting and drying have been undertaken and there are reasons for believing that the industry can be expanded.

Large catches of "bonga" (Ethalmosa dorsalis) are landed. The outer grounds are only accessible to fishermen using deep-sea handlines during the Trade Wind Season, when the winds enable the canoes to get out and back.

SOURCE: Summaries from - United Kingdom Colonial Office, Annual Report on the Gambia Fisheries for the Year 1946, His Majesty's Stationery Office, London, 1948.

British Cameroons

Fisheries do not constitute an important source of food supply in the Cameroons administered by the United Kingdom. Deep-sea fishing has not yet been developed and the existing methods of craft and gear hamper any further developments. Canoes are used in the various fisheries. Principal coastal fisheries are located in the Rio-del-Rey estuary and the fishing here is carried out principally by immigrant fishermen from the adjacent colony of Nigeria. Inshore net casting for bonga or shad (Ethalmosa fimbriata) is the chief activity but handlining is also practiced and numerous basket traps and weirs are used. There are large drift gill nets in the Calibar and the Rio-del-Rey estuaries and in the latter area, numerous fish traps and staked nets are used. The staked nets are worked in sets of up to forty and catch large amounts of the smaller species of prawns; bonga are caught by the larger staked nets. The catch is smoked-dried and a large part of it is transported to the Nigerian markets.

It is thought that the coastal fisheries can be considerably developed with the introduction of boats, preferably with power auxiliary to sail, 9-15 meters in length, European design, capable of carrying much more gear (nets) and larger catches with a greater cruising range than the present day canoes. Increased seaworthiness and the introduction of much larger drift nets and encircling nets than the current primitive cast nets would help to increase the output.

Apart from these coastal and estuarian fisheries, fish supplies are also obtainable from the Lake Chad region, on which the British Cameroons trust territory abuts, together with Nigeria and the other French areas. An important trade in dried fish from this producing area takes place in transit through the Dikwa Province. The open-air drying process preserves the catches sufficiently for distribution, which extends even to the southern provinces of Nigeria.

There is no fisheries service or department in the trust territory but the fisheries will benefit a great deal by the research work of the fisheries departments of the British West African colonies which are to be co-ordinated in this region by the British West African Fisheries Research Institute.

SOURCE; Report by His Majesty's Government in the United Kingdom of Great Britain and Northern Ireland to the Trusteeship Council of the United Nations on the Administration of the Cameroons under United Kingdom Trusteeship for the Year 1947, His Majesty's Stationery Office, London, 1948.

Togoland

The United Kingdom Trust Territory of Togoland is administered as a part of the British Colony of the Gold Coast; it has no coastline. The most important fisheries are those of the Volta River which forms the southwestern border of Togoland for 220 kilometers from the confluence of the Daka River in the north to that of the Dayi River in the south. These fisheries are also exploited by fishermen from the adjacent Ashanti Province of the Gold Coast Colony but, as the fishermen from both banks fish the river impartially, an accurate indication as to the precise extent of Togoland participation cannot be obtained.

Meat, fish, and fats are the main dietary deficiencies throughout the whole territory and the high prices for these commodities keep them out of reach of the poorer people. The fisheries have been influenced by two factors: (a) the high purchasing power of consumers obtaining their income from cocoa production, which increased the demand and the price of the riverside fish sent for the most part to Ashanti markets; and (b) the acarcity and high cost of gear, which have prevented the fishermen from obtaining full benefits from the increase in prices.

Smoked fish are imported from the Gold Coast towns of Keta, Ada, and Accra in addition to supplies from the Wolta River, In the southern section and the Krachi district, fisheries constitute an important source of protein supply. In these areas, the Volta River fisheries are exploited by seine nets. The catch is smoked by the women and most of this product is then marketed in Ashanti and the balance is consumed in Togoland. Activities of the small traders who distribute these supplies are not under official control.

The fisheries survey of the Volta River over a 150 - kilometer stretch between Kete, Krachi, and the Dayi River plan to keep the fisheries on a level to produce a maximum sustained-yield. A survey of the lower stretches of the Volta River was undertaken in 1943. Seine nets have been used throughout the whole length of the Volta River from Lawra to Ada but the Rivers (Fishing) Regulations made these nets illegal in 1938. In 1943, a limited amount of seine was permitted by an amendment and the district commissioners issued permits for certain seine types not more than 73 meters in length with 5 centimeters mesh in the bunt. Information in 1945 indicates that the river was well stocked in the Kpandu area and that the

river fisheries can be extended. The possibilities of using an increased number of seine nets and their effect on the fish stocks are to be carefully scrutinized to prevent over-fishing and depletion. The small prawn fishery cannot be extended and there are apparently no other edible crustaceans and molluscs in the Volta River on which Togoland borders.

The trust territory enjoys the benefit of the services of the officer in charge of fisheries of the Gold Coast. Only one officer, the Fisheries Assistant, is stationed in the territory.

SOURCE: Summaries from - Report by His Majesty's Government in the United Kingdom of Great Britain and Northern Ireland to the Trusteeship Council of the United Nations on the Administration of the Togoland under United Kingdom Trusteeship for the Year 1947, His Majesty's Stationery Office, London, 1948.

TECHNOLOGICAL PUBLICATIONS

It is often difficult for research workers and for people engaged in the fishing industry to keep themselves well-informed about material published in their field. It is particularly difficult to keep track of what is published in the form of laboratory reports, pamphlets, and other nonserial publications. Even books sometimes escape attention.

The Fisheries Division of FAO is in a central position to receive such publications and it is felt that it will be useful to list in the Bulletin a selection of the publications received.

Under the heading Technological Publications information will be given with regard to any literature relating to technological problems in the fishing industry. Only such articles or reports, etc., will be listed that do not appear in periodicals or serial literature, and information will only be given regarding publications that have actually been received or reviewed by FAO. No publication published earlier than 1 January 1948 will be included. A brief resume of the contents of the various publications will be given.

Attention is called to the fact that FAO can undertake no distribution of the material listed and is not in a position to say whether copies would be available. Anyone interested in a listed publication should contact the publisher indicated directly.

Any suggestions with regard to this service and any information regarding additional publications will be welcomed.

FISHERIES IN GENERAL

Fiskeriet i Danmark. Edited by H. Blegvad... Selskabet Til Udgivelse af Kulturskrifter, Copenhagen, Denmark, 1948. Volume I, 660 pp. Volume II, 816 pp., illus., bibliographies. In Danish.

The two volumes contain a comprehensive description of the Danish fresh and salt water fisheries, the gear used and different fishing methods, and the marketing of Danish fishery products and their industrial use.

World Fisheries Yearbook and Directory. Incorporating the North Atlantic fisheries yearbook and the herring exporters manual. Edited by Harry F. Tysser...British-Continental Trade Press Ltd., 222 Strand, London, 1948. 288 pp., illus. In English.

Besides various general articles on fisheries and the fishery trade in various countries, the book contains short chapters on fishery research, construction of fishing vessels, quick freezing, canning, and other processing methods of fish and the utilization of fish waste. It gives a brief list of some research and educational institutions and lists some organizations, trade associations, and trade journals of interest to the fisheries industry. Further, it gives a list of some exporters, processors, wholesalers, importers of fishery products, and suppliers of fishery equipment.

FISHING AND FISHING GEAR

The Japanese Tuna Fisheries. Sidney Shapiro. Fishery Leaflet 297...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., April 1948. 60 pp., illus., bibliography.

A reproduction of Report No. 104, Natural Resources Section, General Headquarters, Supreme Commander for the Allied Powers, Tokyo (March 1948). It describes the various Japanese tunas, tuna vessels, and gear such as nets, drift nets, circling nets, long lines, hooks, etc.

Experimental Fishing for Red Snapper. Robert O. Smith...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., 1948.

(Sep. 195) I. The Use of Hoop Nets. 10 pp., illus.

(Sep. 198) II. The Use of Mechanical Reels. 2 pp., illus.

Reprinted from Commercial Fisheries Review. Describes hoop nets and Pacific Coast salmon gurdies and results obtained with them.

Kite Rigs for Otter Trawl Gear. R.T. Whiteleather. Fishery Leaflet 302...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., May 1948. 7 pp., illus.

Describes the use of boards (kites) to expand the vertical fishing range of otter trawls.

STARFISH STUDIES

Technological Studies of the Starfish. Charles F. Lee...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., 1948.

(Sep. 193) I. Starfish Control--its economic necessity and methods used. 6 pp., illus.

(Sep. 196) II. Chemical Composition. 18 pp., illus.

(Sep. 199) III. Value of Starfish Meal--protein supplement for growth of rats and chicks and for egg production. 19 pp., illus.

Reprinted from Commercial Fisheries Review. These are the first of six articles on the subject.

CRUSTACEANS

The "Bob" Method of Picking Blue Crabs. Emmett Andrews. Fishery Leaflet 276...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., March 1948. 6 pp., illus. In English.

Describes a rational method for picking blue crabs with optimum yield of meat.

FACTORY SHIPS

Freezing Fish at Sea. J.M. Lemon and C.B. Carlson. Fishery Leaflet 278...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., January 1948. 11 pp., illus. In English.

Describes different boats with freezing equipment on board, particularly a French trawler with brine freezing, the tuna-fishing vessels as used on the North American Pacific Coast, an experimental trawler designed for filleting of fish and freezing of fish and crabs, and the American factory ship "Pacific Explorer" which is designed as mother ship for a fishing fleet. In addition, it has facilities for filleting of fish, picking of crab meat, manufacture of fish meal, and freezing of fish and fishery products.

FREEZING

Literature Search on the Preservation of Foods by Freezing. Betty Anderson and B.H. Weil. Special Report No. 25...Atlanta, Georgia, State Engineering Experiment Station, Georgia School of Technology, January 1948, 262 pp., Price $3.00.

A continuation of Special Report No. 23, which contained abstracts up to about 1945. The abstracts are collected from different existing abstracting periodicals up to June-July 1947. Contains the full abstracts as found and a very detailed index.

CANNING

Konserves af Sildehaj (Canning of mackerel-shark). Alice Bruun and Knud Nielsen. Meddelelse Nr. 72...Fiskeriministeriets Forsøgslaboratorium, Øster Voldgade 10, Copenhagen K., Denmark, March 1948. 4 pp. In Danish with English summary.

Essai sur la technique des conserves de poissons et de crustaces en boites metalliques. R. Dieuzeide and M. Novella. Documents et renseignements agricoles, Bulletin No. 137... Gouvernement General de l'Algerie, Direction de l'Economie Algerienne, Inspection Generale de l'Agriculture, Algiers, Algeria, 1948. 510 pp., illus., bibliographies. In French.

The book contains a detailed description of the canning of fish and shellfish, especially as it is carried out in France and Algeria. It thus gives much information that has not been available before.

It describes the different grades of salt, properties of different oils used in canning, etc., and French manufacture of tin plate and sanitary tin cans, and gives formulas for lacquers for such cans.

The different principles used in fish canning, such as preboiling in water or oil, smoking and dr ing in hot air or steam, both under ordinary conditions and under pressure are discussed, and detailed descriptions of the canning of numerous fish and shellfish products are given.

A chapter describes sanitation and layout of French fish canning plants. The book further contains a collection of French and Algerian rules and regulations with regard to the canning of fishery products.

Tilsaetning af Antioxydationsmidler til Torskeleverpostej. (Addition of antioxydants to cod-liverpaste.) Poul Fr. Jensen and Mogens Jul. Meddelelse Nr. 71...Fiskeriministeriets Forsøgslaboratorium, Øster Voldgade 10, Copenhagen K., Denmark, March 1948. 4 pp. In Danish with English summary.

Holdbarhedsprøvning og Termostatprøvning af Konserves (Testing of keeping qualities of canned products). Ole Møller, Knud Nielsen, Hans Riemann and Mogens Jul. Meddelelse Nr. 70...Fiskeriministeriets Forsøgslaboratorium, Oster Voldgade 10, Copenhagen K., Denmark, February 1948. 11 pp., illus. In Danish with English summary.

Contains information regarding testing in incubators and the number of cans to be tested. Also, instructions for constructions of incubators are given.

CHEMICAL COMPOSITION OF FISHERY PRODUCTS

Fedtindhold i Nordsosild 1947. (Fat content of Danish caught North Sea Trawlherring 1947.) Knud Nielsen. Meddelelse Nr. 74...Fiskeriministeriets Forsøgslaboratorium, Øster Voldgade 10, Copenhagen K., Denmark, April 1948. 5 pp. In Danish with English summary.

Chemical Composition of Some Canned Fishery Products. Ray Treichler, Charles F. Lee, and Norman D. Jarvis. Fishery Leaflet 295...United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., March 1948. 7 pp. In English.

LIVER AND LIVER OILS

Distribution of Oil and Vitamin A in Fish Livers. Glenn C. Bucher, William Clegg, and F. Bruce Sanford. Fishery Leaflet 290...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., February 1948. 3 pp., illus. In English.

Gives the distribution of oil and vitamin A in male soupfin shark livers. The results of this investigation are repeated in Fishery Leaflet 233 (see below).

Preliminary Report on Sampling of Fish Livers. G.C. Bucher, W.S. Hamm, F.B. Sanford, and W. Clegg. Fishery Leaflet 289...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., February 1948. 4 pp. In English.

Describes different methods of sampling of fish livers with the object of determining their oil and vitamin A content.

The Fish Liver Oil Industry. Charles Butler. Fishery Leaflet 233...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., March 1948. 104 pp., illus. In English.

Describes the liver and contents of oils and vitamins of different species of fish, the preservation and storage of livers, extraction methods, and equipment for oil extraction. Also, methods are given for sampling of fish livers and for estimation and measurement of vitamin A and D content. Describes briefly the use of liver oils and the utilization of fish livers and fish liver oil in various countries.

A Rapid Method for Determining the Vitamin A Potency of Fish Livers. F. Bruce Sanford. Fishery Leaflet 242...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., June 1948. 2 pp. In English.

A method for determination of the total amount of vitamin A in fish livers without extracting the oil. The method is especially designed for use when fish livers are brought on a potency basis.

WHALE PRODUCTS

Ambergris. Fishery Leaflet 280...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., January 1948. 4 pp. In English.

Describes the origin of ambergris and its use in perfumes.

Ambergris in Perfume Extracts. Victor Hasslauer. Fishery Leaflet 281...United States Department of the Interior, Fish and Wildlife Service, Washington 25, D.C., January 1948. 6 pp. In English.

The properties of ambergris and its testing and use in the perfume industry.

QUALITY CONTROL

Om Anvendelse af pH-Maaling til Friskheds-bestemmelse af Torskefilet. (On the use of pH-measurement for determining the freshness of bad fillets.) Mog Kondrup. Meddelelse Nr. 73...Fiskeriministeriets Forsøgslaboratorium, Øster Voldgade 10, Copenhagen K., Denmark, April 1948. 6 pp., illus. In Danish with English summary.

The measurement pH was found unreliable as a freshness test.

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